WILDLIFE REVIEW

AN ABSTRACTING SERVICE FOR WILDLIFE MANAGEMENT
ISSUED FOR THE INFORMATION OF COOPERATORS
BY THE FISH AND WILDLIFE SERVICE
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Except as indicated, abstracts are by Neil Hotchkiss, editor.

WILDLIFE (GENERAL)--BIBLIOGRAPHY

BUDGE, CHRISSIE E. Bibliography of the geology and natural resources of North Dakota, 1814-1944. 214 pages. North Dakota Research Foundation, Bulletin No. 1. 1946.

An alphabetical listing by authors of 995 items, mostly relating to geology, water, and soils (biological references are mostly in Bulletin No. 4). Most of the items are annotated. There are subject, author, and journal-finding indexes.

BUDGE, CHRISSIE E. First supplement, 1948, bibliography of the geology and natural resources of North Dakota. 90 pages. North Dakota Research Foundation, Bulletin No. 4. 1948.

An alphabetical listing by authors of 360 items. Most of the items are annotated. A large number relate to the biology of the state (geological references to the period 1814-1944 are mostly in Bulletin No. 1). There are subject, author, and journal-finding indexes.

WILDLIFE (GENERAL)--COMMUNITIES

GRINNELL, HILDA WOOD. The redwood forests, a wildlife habitat. Audubon Nature Bulletin 19(2): 1-4, illus. October 1948.

The author describes the physical environment and the plant and animal associates of the big trees of the Sierra Nevada and the coast redwoods of Oregon and California.

HAYWARD, C. LYNN. Biotic communities of the Wasatch chapparral, Utah. Ecological Monographs 18(4): 473-506, illus. October 1948.

The author carried on field work in this area at intervals between 1931 and 1945. He describes the physical features, the biotic matrix (ground, herb-low shrub, and tall shrub layer societies, composed of plants and invertebrates), the permeant influents (reptiles, birds, and mammals), vegetational and faunal relations with adjacent communities, and succession. The chaparral occurs on slopes between 5100 and 7500 feet. Gambel oak is the dominant shrub. The herb-low shrub layer has been greatly affected by livestock grazing. Most of its plant and animal constituents are characteristic of the adjacent montane forest or desert. There are lists of birds, mammals, reptiles, and common plants.

WILDLIFE (GENERAL)--EDUCATION

BULGER, J. D. Conservation education. New York State Conservationist 3(3): 14-15, illus. December-January 1948-1949.

The New York State Conservation Department's Division of Conservation Education believes that the schools carry the main educational load. The author tells some of the ways the Division is furnishing them with teaching material.

YEATTER, RALPH E. Conservation activities manual for Illinois 4-H club members. 27 pages, illus. University of Illinois College of Agriculture, Extension Service, Urbana. February 1948.

This is a manual for the study of wildlife and its conservation. It discusses refuge cover and nesting cover, winter food, water, fur-bearers and small game mammals, predators, censusing, and other subjects.

WILDLIFE (GENERAL)--FAUNAS & MANUALS

ANONYMOUS. Game birds--mammals--fish of Virginia. 62 pages, illus. Commission of Game and Inland Fisheries, Commonwealth of Virginia, Richmond, Va. 1948.

Information on each of Virginia's game species--except ducks.

MANVILLE, RICHARD H. The vertebrate fauna of the Huron Mountains, Michigan. The American Midland Naturalist 39(3): 615-640, illus. May 1948.

The author surveyed this Upper Peninsula area between 1939 and 1942. He describes the nature of the country and its weather and lists the following numbers of species and subspecies: 47 fishes, 13 amphibians, 9 reptiles, 206 birds, and 50 mammals. There are brief notes on amphibians, reptiles, and birds, and detailed notes on mammals.

MUNRO, J. A. The birds and mammals of the Vanderhoof region, British Columbia. The American Midland Naturalist 41(1): 1-138, illus. January 1949.

This important waterfowl area is near the center of the province, in the upper Fraser River drainage. The author worked in it in the spring and summer of 1945 and 1946. He describes the lakes district, terrestrial and aquatic vertebrate habitats, bird migration, duck concentrations, loss of young ducks, infestation of passerine birds by Protocalliphora, and berries as bird food. The accounts of the habitats are rich with plant and animal details. Annotated lists of 187 species and subspecies of birds and 28 species of mammals fill more than 90 pages.
Particularly long accounts are those of mallard, blue-winged teal, baldpate, redhead, Barrow goldeneye, bufflehead, bald eagle, coot, black tern, saw-whet owl, robin, red-wing, white-throated sparrow, and coyote.

WILDLIFE (GENERAL)--FOOD

MAYNARD, LEONARD A. Animal nutrition. Second edition. 494 pages, illus. McGraw-Hill Book Company, Inc., New York. 1947. $5.00.

"The purpose of this book is to present the principles of nutrition and their applications in feeding practice. While these applications are made to farm animals primarily, consideration is also given to the broader relationships and significance of the basic principles." "The same underlying principles have found application in the conservation of wild life....."

WILDLIFE (GENERAL)--HABITATS

FREY, D. G. Lakes of the Carolina bays as biotic environments. Journal of the Elisha Mitchell Scientific Society 64(2): 179. December 1948.

This is an abstract of a paper presented at the forty-fifth annual meeting (1948) of the North Carolina Academy of Science. All the lakes are less than 14 feet deep. Waccamaw, the largest, has a neutral pH, an extensive clam and snail population, and the most species of fish. The others have an acidity of less than pH 5, and 1 species of snail. White Lake is the only one that does not have brown water and the only one with much vegetation in deep water.

WILDLIFE (GENERAL)--HABITATS--Continued

THOMPSON, LAURA. The basic conservation problem. The Scientific Monthly 68(2): 129-131. February 1949. In this discussion of island communities, particularly those of Micronesia, the author emphasizes nonindigenous man's destructiveness; while ".....isolated human groups, through their cultures, tend in the long run to cooperate with natural processes and to foster rather than destroy the web of life." ".....there is a strong tendency among scientists and laymen alike to think of conservation mainly in terms of birds and forests, soil, and water supplies, rather than in terms of a balanced relationship between local populations and their natural environments."

WILDLIFE (GENERAL)--MANAGEMENT

ALLEN, DURWARD L. The farmer and wildlife. 86 pages, illus. Wildlife Management Institute, Investment Building, Washington 5, D. C. 1949.
"This bulletin is a brief guide to farm wildlife management in eastern United States." It discusses the place of wildlife in the farmer's business; animal populations; living standards for pheasants, quail, mourning doves, rabbits, fox squirrels, muskrats, waterfowl, furbearers, and woodchucks; improving the farm for wildlife; nuisance animals; and the game and fur harvest. "The wise landowner will not graze his woodlots, marshes, and streambanks. He will refrain from burning fencerows, pastures, and lowlands." "In the proper places he will make use of legume field borders, contour hedges, and living fences; and he will permit the development of natural-brush cover and hedgerows." There are many excellent photos and drawings.

BRADLEY, BEN O. PR-48-D. New York State Conservationist 3(4): 8-9, illus. February-March 1949.
A program of wildlife cover development was begun in New York in April 1948. Approved practices are as follows: (1) tree planting, (2) establishment of woodland borders, (3) hedge planting, (4) stream bank planting, (5) planting odd corners or fencing them against grazing, (6) windbreak planting, (7) fencing woodlands against grazing, (8) pond development, and (9) marsh development. Most of the work is being done by landowners in the Soil Conservation Districts, with the assistance of the State Conservation Department and the U. S. Soil Conservation Service. In 1948 more than 450,000 conifers and 70,000 shrubs were planted on 112 farms in 12 counties, and livestock was fenced from 700 acres of woodland. In 1949 it is planned to plant more than 2 million conifers and 1 million shrubs and to develop several hundred marshes. In 1949 or 1950 the program will be extended to include cooperators under the Forest Practice Act.

CALLISON, CHARLES. Wildlife pays its keep. The Farm Quarterly 3(2): 46-51, illus. Summer 1948.
The greater part of America's small game is produced on farms. The author tells how to raise more.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

DAMBACH, CHARLES A. The relative importance of hunting restrictions and land use in maintaining wildlife populations in Ohio. The Ohio Journal of Science 48(6): 209-229, illus. November 1948.

The author gives a thorough chronological account of wildlife-use restrictions in Ohio, and summarizes land use and social changes in relation to wildlife populations. "The writer is convinced that regulations are necessary to assure an orderly and fairly distributed harvest of the wildlife crop but that their use should be tempered with recognition of their limitations....." "Enforcement of hunting restrictions even to the extent of completely closed seasons has not been effective in halting the decline of wildlife suffering from habitat depletion. Most if not all wildlife declines in Ohio have been of this type." "The chief factor determining long time trends in game populations in Ohio is land use."

OLDS, HAYDEN W. Sportsmen--meet your wildlife lands. Wildlife in North Carolina 13(3): 12-16, illus. March 1949.

A map shows the location of 18 federal and state areas. A table and brief descriptions outline their resources and the plans for their management.

SHOW, S. B. and others. Wildlife management handbook for forest officers. Region 5. 234 pages, illus. U.S.D.A., Forest Service, San Francisco. 1947.

"This Handbook undertakes to bring together what is known (or in many cases assumed), to indicate methods by which habitats can be modified to aid different species, and to suggest ways to help wildlife without seriously interfering with other uses of timber, range, and watershed areas." It applies only to the national forests of the California region.

SKIFF, J. VICTOR. Some conservation problems for the New Year. New York State Conservationist 3(3): 18-19. December-January 1948-1949.

Some of New York State's research needs are (1) the testing of various game management practices, (2) the testing of various fish and game stocking methods, (3) the testing and development of practical methods of population control, (4) the development of disease-resisting strains of fish, and (5) the development of practical ways of increasing forage fishes. Another important need is for education. And most important of all is the need for action in soil, forest, and wildlife conservation.

SLAUTERBACK, JOHN J. The cooperative farm-game program moves forward. Pennsylvania Game News 18(12): 10,28, illus. March 1948.

This program began in 1936. It progressed more in 1947 than in any previous year. It emphasizes aiding farmers in soil-saving and crop-producing measures. A cooperative project must contain at least 1000 acres of contiguous farms, with two-thirds of the area open to public hunting. At the end of 1947 there were 91 projects totalling 300,000 acres.

WILDLIFE (GENERAL)--MANAGEMENT--Continued

VALE, ROBERT B. How to hunt American game; a grass-roots guide to American hunting. 199 pages, illus. Military Service Publishing Co., Harrisburg, Pa. 1946. $4.00.

Most of the chapters describe the habits and the hunting of one group after another of game birds and mammals. However, this is more than a book on how to hunt--it discusses the factors that make hunting possible: character and training of hunters, dogs, game refuges, stocking, weather, predators, habitat improvement.

WOLF, BILL. The case for the cooperative farm-game program. Pennsylvania Game News 18(6): 3,26-27,34-35, illus. September 1947.

The author discusses the details of this Pennsylvania program. "No one, and least of all the Game Commission, pretends that the Cooperative Farm-Game Program is a solution to all the sportsman-landowner problems. It only feels that it is a step in the right direction and that results in the first ten years, from 1936 to 1946, encourage it to work toward its goal of leasing eventually one million, or even more, acres of farmland under the program."

WILDLIFE (GENERAL)--MORTALITY

EVANS, THOMAS R. What about those predators? The Conservation Volunteer 11(64): 16-21, May-June 1948.

Predator control should not be undertaken in an area without first soundly establishing its need by evaluation studies in the field. An important factor that should be considered when determining whether or not predator control should be practiced is threshold of security. "The term 'threshold of security' defines the point in the population level beyond which the land, in its existing condition, can not provide secure living quarters for additional birds during the critical period of the year." The role of the predatory species in the complete scheme of nature must also be considered before beginning any control campaign.--M. A. Slattery.

GOODRUM, PHIL; BALDWIN, W. P.; and ALDRICH, JOHN W. Effect of DDT on animal life of Bull's Island, South Carolina. The Journal of Wildlife Management 13(1): 1-10, illus. January 1949.

Plots on Bull's Island, Charleston Co., S. C. were sprayed from the air in the spring of 1946. DDT was sprayed over the forest at the rate of 3 pounds per acre, but the maximum deposition recorded was 0.91 pound per acre. Tick control reached 85% in 6 weeks, and insect mortality was great. Birds and mammals apparently were not affected; many amphibians were killed but many were unaffected; reptiles and fish apparently were affected less than amphibians. DDT was sprayed over the salt marsh at the rate of 2 pounds per acre. This practically eliminated fiddler crabs but had no immediate effect on snails and mussels.

WILDLIFE (GENERAL)--POPULATIONS

CROMBIE, A. C. Interspecific competition. The Journal of Animal Ecology 16(1): 44-73, illus. May 1947.

The author discusses the effects of interspecific competition among bacteria, higher plants, invertebrates, and vertebrates on their abundance, distribution, structure, and habits. There is a list of approximately 250 references.

DEEVEY, EDWARD S., JR. Life tables for natural populations of animals. The Quarterly Review of Biology 22(4): 283-314, illus. December 1947.

Most of the author's discussion is concerned with ecological life tables that are based (1) on age at death directly observed, (2) survivorship directly observed, and (3) age structure directly observed. Examples are Dall sheep in Alaska, the rotifer Floscularia, herring gulls in New Brunswick 5 British birds, American robin, barnacles, snowshoe rabbit in Minnesota, song sparrow, pheasant, cormorant in the Netherlands, common tern in Massachusetts, largemouth bass, bluegills, and others. In most instances this is the first attempt to make life tables ".....showing for each age interval the number of deaths, the number of survivors, the mortality rate and the expectation of further life of members of an initial cohort of 1000 individuals." The ecological information is of unequal value; therefore the comparisons are limited. The best examples are from Hatton's work with the barnacle Balanus balanoides. There are about 60 references.

ROWAN, WILLIAM. The ten-year cycle; outstanding problem of Canadian conservation. 2nd edition. 16 pages, illus. Department of Extension, University of Alberta, Edmonton. August 1948.

The cycle has been familiar to the fur trade for more than 200 years. This summary is primarily of conditions in Alberta. The principal animals involved are snowshoe rabbit, most grouse, Hungarian partridge, most fur-bearers, and probably pheasant and others. The author describes the dramatic rise and fall of a single cycle in the vicinity of Edmonton: Rabbits, sharp-tailed grouse, ruffed grouse, Hungarian partridges, pheasants, magpies, evening grosbeaks, and bluejays were at a peak in 1942. During the next two years most of them disappeared. "To both the fur trade and sportsmen this periodicity has proved a disturbing element: to the biologist it presents one of the most mysterious problems in the field of conservation."

WILDLIFE (GENERAL)--RESEARCH

ANDERSON, RUDOLPH MARTIN. Methods of collecting and preserving vertebrate animals. Second edition revised. 162 pages, illus. National Museum of Canada, Bulletin No. 69(Biological Series No. 18). March 1949. $1.00, cloth; 50¢ paper.

6 chapters deal, respectively, with general principles; collecting mammals; skinning mammals; collecting and skinning birds; collecting reptiles, amphibians, and fishes; and collecting skeletons. Particularly helpful are the drawings and the descriptions of special treatments for various mammals and birds and for different conditions of material. There is an annotated list of about 150 references.

WILDLIFE (GENERAL)--RESEARCH--Continued

LANGLOIS, THOMAS H. The biological station of the Ohio State University. 64 pages, illus. The Franz Theodore Stone Laboratory, Contribution No. 11. 1949.

This laboratory in western Lake Erie has operated since 1896. The author describes its development, its teaching program (now at graduate level), and its research program (mainly on problems connected with the productivity of Lake Erie). Appendices list (1) the sets of volumes in the departmental library, (2) courses offered at the biological station, (3) instructors, (4) selected station alumni, and (5) published reports on researches.

WILDLIFE (GENERAL)--VALUES

SKUTCH, ALEXANDER F. A conservationist's philosophy. Audubon Magazine 51(1): 12-19,41, illus. January-February 1949.

This philosophy includes (1) the desirability of preserving unique natural objects, (2) preservation of the means of subsistence, (3) the unity of conservation (".....nature is.....a single vastly complex community of many interacting organisms....." The unity of conservation transcends special interests and national boundaries. "We cannot even favor man himself without considering him a part of a larger biotic community."), (4) the need for research, (5) the need for teaching others, and (6) reverence for living things.

MAMMALS--FAUNAS & MANUALS

ANONYMOUS. Furbearers and game mammals of Oklahoma. 2nd edition. 43 pages. illus. Oklahoma Game and Fish Department, State Capitol, Oklahoma City 5. July 1948. Free.

The first edition was published in February, 1942.

BRADT, G. W. and SCHAFER, CHARLES E. Michigan wildlife sketches; the better-known mammals of Michigan's forests, fields, and marshes. 47 pages, illus. Michigan Department of Conservation, Education Division, Lansing. 1947. 25¢.

Pages of drawings paired with pages of text give a clear and attractive picture of most of Michigan's mammals except bats, insectivores, and smaller rodents.

RAND, A. L. Mammals of the eastern Rockies and western plains of Canada. 237 pages, illus. National Museum of Canada, Bulletin No. 108(Biological Series No. 35) 1948. 50¢.

The author discusses topography, area, climate, and vegetation, and describes each species under the following headings: geographical variation, distribution in Alberta, life history, and general information. There are references at the end of each description. Numerous drawings, photos, and colored plates illustrate the text well.--M. A. Slattery.

RAND, A. L. Mr. W. H. Bryenton's notes on Manitoba mammals of the Herb Lake--Flin Flon area. The Canadian Field-Naturalist 62(5): 140-150. September-October 1948.

Detailed notes on 37 species.

MAMMALS--MORTALITY

ADAMS, LOWELL. The effects on mammals of DDT used in forest insect control in the northern Rocky Mountains. Northern Rocky Mountain Forest and Range Experiment Station, Research Note No. 56. 3 pages. November 21, 1947.

Studies in 1947 in Idaho and Wyoming indicated that ".....DDT in amounts up to 7½ pounds per acre has little or no adverse effects on mammals."

MAMMALS--POPULATIONS

RICHMOND, NEIL D. The Pennsylvania mammal survey. Pennsylvania Game News 19(6): 7,26,30,32, illus. September 1948.

This detailed study was begun in July 1946. Work in the northwest part of the state will be finished in the fall of 1948, that in the southwest in the summer of 1949.

MAMMALS--BIG GAME (GENERAL)
(See also MAMMALS--FURBEARERS (WOLVES), Callison)

ANONYMOUS. Wyoming feeds its game. Wyoming Wildlife Life 13(1): 4-7, 37-38, illus. January 1949.

This winter has been one of the most severe in Wyoming's history. As a result, deer, antelope, and elk have suffered a great deal. At the end of January more than 12,000 head of elk were being fed by the State Game and Fish Commission and 2,020 tons of hay and 306 tons of cottonseed cake were on hand for feeding.--M. A. Slattery.

MAMMALS--BIG GAME (DEER)

ALLEN, DURWARD L. Does ain't deer. Sports Afield 120(6): 19-21,90-91, illus. December 1948.

Hunters and resort owners can hardly conceive of too many deer; but in 30 states "We are holding our herds at too high a level and letting them ruin winter ranges by overbrowsing." The fawns and does are first to starve, and winter feeding is no solution of the problem. Experiences in states that shoot both sexes and those that shoot only bucks show that the former practice is the way to maintain a healthy herd, prevent destruction of the winter food supply, permit forest reproduction, control crop damage, reduce illegal kill and waste of meat, and maintain a good environment for other game.

BOLIN, F. M. and others. Brucellosis in North Dakota deer--a survey. Bimonthly Bulletin 11(3): 102-103, illus. January-February 1949.

Agglutination tests made on 436 deer showed an 0.23% incidence of infection. "The results of this survey show that from practical considerations brucellosis is not a disease of significance to the state white-tailed deer herd and that these deer need not be considered of importance in the program directed against brucella infection of farm animals."

MAMMALS--BIG GAME (DEER)--Continued

GRASSE, JAMES E. The 1949 white-tail transplant. Wyoming Wild Life 13(2): 4-9, illus. February 1949.

Since the turn of the century the white-tailed deer population in Wyoming d windled to an alarmingly low number. The Fish and Game Commission made several small, experimental brood stock plantings at widely separated locations. These were obtained from Sand Creek, the area which has the most serious over-concentration of deer in the state. The method of trapping and planting is described. A total of 218 were sucessfully planted.--M. A. Slattery.

HOLZEG, ARTHUR W. Deer kill, season of 1948. New York State Conservationist 3(4): 24-25. February-March 1949.

375,000 licensed hunters made an all-time record kill of 37,683 whitetailed deer. 25,000 were bucks and does taken in 10 southern and western counties. The Adirondack kill was under that of 1947, due to a reduction of young bucks by the severe winter of 1947-48, reduced hunting pressure, dogs, and other causes. The kill in the southwestern counties was 21,000 more than in 1947--the result of an attempt to keep the range from being overbrowsed. Reproductive capacity in this area is 100% greater than in the Adirondacks.

HOUGH, A. F. Deer and rabbit browsing and available winter forage in Allegheny hardwood forests. The Journal of Wildlife Management 13(1): 135-141, illus. January 1949.

Between 1936 and 1946 an investigation in the Allegheny National Forest showed that "Rabbits damage the low cover of tree and shrubby browse beneath second-growth Allegheny hardwood forests to a much greater extent than deer. Under complete protection a remarkable recovery of the browse species takes place in 5 to 10 years. Only slight recovery took place when deer alone were excluded. Efforts should be made to control the rabbit population in lower slope and valley bottom sites used for winter range."

HUNTER, GILBERT N. History of white-tailed deer of Colorado 1948. 10 pages, illus. The Colorado Game and Fish Department, Denver. 1948.

A map shows the former and present range of Plains White-tailed Deer in Colorado. There is no evidence of their present year-around occurrence, but in summer a small number range a short distance into the state from New Mexico. The former habitat is varied and would still support limited numbers of deer ".....if poaching and land use, such as grazing and agriculture, were not intolerable limiting factors."

LATHAM, ROGER M. Harvesting our deer crop. Pennsylvania Game News 19(2): 4-5,17,21, illus. May 1948.

The author reviews the history of the Pennsylvania deer herd. Overpopulation has resulted in reproductive abnormalities and winter starvation. There is need for yearly harvest of both sexes.

MAMMALS--PIG GAME (DEER)--Continued

STOLLBERG, BRUCE P. The white-tailed deer in Wisconsin. Pro Natura 1(2): 89-91, illus. October 1948.

The deer situation today in Wisconsin is serious. The increase in population has decreased the food supply to the point where deer are starving. The Wisconsin Conservation Department has 3 goals: (1) a type of management that improves range, enabling it to maintain more deer, (2) a practical means of effectively gauging and controlling the population, (3) a policy that will make the ill-informed hunter a true conservationist.

MAMMALS--PIG GAME (ELK & BEAR)

ARNER, DALE H. Fall food of the black bear in Pennsylvania. Pennsylvania Game News 19(9): 13. December 1948.

26 scats taken from northeastern Pennsylvania in November 1946 and 1947 contained much apple, black gum, and acorns (together about 2/3 of total) and a wide variety of other items including hair of deer, cottontail, bear, and horse.

RANFIELD, A. W. F. An irruption of elk in Riding Mountain National Park, Manitoba. The Journal of Wildlife Management 13(1): 127-134, illus. January 1949.

"The present status of Manitoba elk (Cervus canadensis manitobensis) in Riding Mountain National Park, Manitoba, was investigated during the winter and late spring of 1947. It was found that the severe winter conditions of 1946-47 had caused an estimated drop from 77.1 to 58.7 elk per square mile on the concentrated elk ranges, which are estimated to total 180 square miles. This means an estimated mortality of 20 per cent, due to winter kill." ".....the youngest and senile classes suffered the greatest losses. There were widespread infestations of external and internal parasites." "The high population of elk caused severe damage to the aspen stands."

MAMMALS--FURBEARERS (GENERAL)

CHASE, WARREN W. and BEARD, ELIZABETH B. Outline of the management of fur animals. 46 pages. The Overbeck Co., Ann Arbor, Mich. 1948.

This is the third in a series of teaching aids in wildlife management. It is divided into 28 units. Each comprises an outline, questions, and references. Subjects presented are taxonomy, anatomy, physiology and general habits, fur characteristics, distribution, techniques for study, life histories, the fur trade, management methods (restrictive legislation, nuisance animal control, protected areas, stocking, environmental control), fur farming, processing and fabrication, and future of fur animals and land use.

COLEMAN, DEAN. Survey shows fur bearers decreasing. Colorado Conservation Comments 10(8): 17-18,29, illus. December 1948.

In spite of this decrease, the catch in 1947-48 was up from the preceding year. This was due mostly to the increased value of muskrat pelts. The take of mink dropped even though the price of pelts increased.

MAMMALS--FURBEARERS (GENERAL)--Continued

McKEAN, WILLIAM T. Foods of trapped North Dakota predatory animals. Bimonthly Bulletin 10(3): 105-112, illus. January-February 1948.
This article contains nearly the same material as the author's "Winter foods of North Dakota predatory animals" in the February 1948 North Dakota Outdoors. This was abstracted on page 15 of Wildlife Review No. 53.

WILSON, KENNETH. North Carolina's fur resources. Wildlife in North Carolina 13(3): 8-11, illus. March 1949.
Half a million dollars worth of fur is taken annually in North Carolina. Muskrats lead in value and in number of pelts. Next in value are mink. Research in muskrat management is in progress in Currituck County.

MAMMALS--FURBEARERS (BEAVER)

BLACKWELL, WILLIAM P. The beaver makes a comeback. Virginia Wildlife 10(1): 19-20, illus. January 1949.
"For a long time the beaver was extinct in Virginia. Now it is found in 24 counties."

HARRISON, HAL H. The hunters' stake in Pennsylvania beaver. Pennsylvania Game News 19(12): 6,23, illus. March 1949.
More than 2900 beaver were trapped in Pennsylvania in February 1948. In Crawford County, where more were taken than in any other county, the author found mallards, blacks, and wood ducks nesting and migrating ducks feeding in beaver ponds.

MAMMALS--FURBEARERS (MUSKRAT)

COOK, A. H. Farm marsh for muskrat. New York State Conservationist 3(3): 20, illus. December-January 1948-1949.
The author gives examples of the productivity of small marshes and tells how to make a good muskrat marsh.

STEARNS, L. A., and others. Report of the use of DDT and Paris green on muskrat marshes. Proceedings of the Thirty-fourth Annual Meeting of the New Jersey Mosquito Extermination Association. Pages 82-95, illus. New Brunswick, N. J. 1947.
A tidal marsh at Liston Point, Delaware was studied in 1946. It had a large muskrat population. The experimental period was cooler and wetter than average. Spraying operated as a disturbance factor but "Neither DDT(at rates of 0.1 and 0.2 pound per acre) nor paris green (at rates of 2 and 4 pounds per acre), as applied with a power sprayer to control mosquito-breeding..... affected adversely muskrats which fed on the treated vegetation."

MAMMALS--FURBEARERS (WOLVES)

CALLISON, I. P. Wolf predation in the north country. 89 pages, illus. I. P. Callison, Lloyd Bldg., Seattle 1, Wash. July 1948. $1.00.

The author gives much information on the destructiveness of wolves to mountain sheep, reindeer, and caribou. He concludes that "In the sub-Artic and in every area where long winters and deep snows are prevalent the wolf is not only excess baggage but his presence in numbers is wholly malignant." In such areas ".....climatic conditions weed out the unfit and assure the survival of a virile race." Harrying probably does more harm than killing. It disturbs feeding and rest and limits reproduction. Aggressive predator control should have been undertaken in all the North Country 15 or 20 years ago. "The advent of the white man and the multifarious pressures of the white man's civilization on North American wild life have made intelligent interference mandatory."

MAMMALS--RODENTS (DOMESTIC RAT)

AUSTIN, OLIVER L. Predation by the common rat (Rattus norvegicus) in the Cape Cod colonies of nesting terns. Bird-Banding 19(2): 60-65, April 1948.

"Predation by the common rat has been overwhelmingly the greatest deterrent to a successful nesting" during 19 consecutive years' observation of colonies of common, roseate, and arctic terns on Cape Cod, Mass. The great horned owl is the only other important predator. The author describes the pattern of predation and methods for its prevention or control.

CALHOUN, JOHN B. A method for self-control of population growth among mammals living in the wild. Science 109(2831): 333-335, illus. April 1, 1949.

A recent experiment with a colony of wild Norway rats indicates that ".....social conditioning may be a potent factor in population control among mammals."

SCHOOF, H. F. Common ectoparasites of the Norway rat, Rattus norvegicus (Erxl.), in North Carolina and the effect of 10 per cent DDT dust treatments in their control and upon the serology of the rat. Journal of the Elisha Mitchell Scientific Society 64(2): 208-215. December 1948.

In September 1945 there was inaugurated in North Carolina a DDT-dusting program for the control of endemic typhus. 36,771 ectoparasites were taken from 854 rats from 17 towns. The rat louse, Polyplax spinulosa, made up 75% of this population. Fleas comprised 14% of the population (the oriental rat flea, Xenopsylla cheopis, was commonest). 10% DDT dust controlled 3 species of fleas but did not control the rat louse. Examination of rat sera for 2½ years showed a reduction in the number of positive complement fixation tests after the first 6 months.

MAMMALS--RODENTS (SQUIRRELS)

ALLISON, RAY. Preliminary report on gray squirrel investigation in North Carolina. Journal of the Elisha Mitchell Scientific Society 64(2): 177. December 1948.

This is an abstract of a paper presented at the forty-fifth annual meeting (1948) of the North Carolina Academy of Science. There has been a decline in gray squirrel abundance. Factors to be considered in establishing an open season are variation in percentage of breeding animals, variation in bot-fly larvae infestation, and wishes of sportsmen.

MAMMALS--RODENTS (SQUIRRELS)--Continued

FITCH, HENRY S. Ecology of the California ground squirrel on grazing lands. The American Midland Naturalist 39(3): 513-596, illus. May 1948.

This species is outstanding in the damage it does to livestock ranges in the California foothills. The author studied it in 1938-1942 and in 1946 on the San Joaquin Experimental Range, northeast of Madera in the lower Sierra Nevada foothills. On an 80-acre study area more than 1500 squirrels were marked. They were recaptured more than 15,000 times. Census counts, feeding records, and general observations were made there and elsewhere on the Range, 63 kinds of plants were found to have been eaten, but only a few in large amounts. Squirrels damaged much more vegetation than they ate. Competition with stock was most severe from late fall to spring. Predators appeared to take about half the annual increase.

RAUSCH, ROBERT and TINER, JACK D. Studies on the parasitic helminths of the north central states. I. Helminths of Sciuridae. The American Midland Naturalist 39(3): 728-747, illus. May 1948.

Beginning in 1942 the authors examined 325 sciurids that they collected in Ohio, Michigan, Illinois, and Wisconsin. These included fox squirrel, gray squirrels, red squirrel, chipmunk, eastern flying squirrel, northern flying squirrel, 13-lined ground squirrel, Franklin's ground squirrel, and woodchuck. They also examined helminths taken from 5 species from Minnesota. The authors discuss the occurrence of the 33 species of helminths found, the ecology of the sciurids, and the significance of the parasitism. They list more than 50 references.

MAMMALS--RODENTS (MICE, ETC.)

BLAIR, W. FRANK. Population density, life span, and mortality rates of small mammals in the blue-grass meadow and blue-grass field associations of southern Michigan. The American Midland Naturalist 40(2): 395-419, illus. September 1948.

Populations of small mammals in blue-grass meadow and blue-grass field associations in southern Michigan were followed from 1938 through 1942. Marked annual fluctuations were found in 3 species. Meadow vole (Microtus p. pennsylvanicus) and lemming vole (Synaptomys c. cooperi) populations were high in 1938 and 1942 and lower in the other years. Jumping mouse (Zapus h. hudsonius) populations were high in 1939. Deer-mouse (Peromyscus maniculatus bairdii) and wood-mouse (Peromyscus leucopus noveboracensis) populations varied considerably from year to year but did not show the extreme density changes of the voles. Populations of the short-tailed shrew (Blarina brevicauda carolinensis) tended to remain at a low, relatively uniform level. Average life span of the prairie deer-mouse, the wood-mouse, and the meadow vole in nature was estimated to be less than 5 months. Survival curves showed approximately the same mortality rate at all seasons of the year. --Lucille F. Stickel.

MAMMALS--RODENTS (MICE, ETC.)--Continued

HARKEMA, REINARD and KARTMAN, LEO. Observations on the helminths and ectoparasites of the cotton rat, Sigmodon hispidus hispidus Say and Ord, in Georgia and North Carolina. Journal of the Elisha Mitchell Scientific Society 64(2): 183-191. December 1948.

100 rats from Augusta, Ga. were examined in the winter of 1945-1946; 200 rats from Wake County, N. C. were examined in 1939-1942. The Georgia rats harbored 3 species of helminths, the North Carolina rats 6 species. 5 species of ectoparasites were found on 35 Georgia rats, 8 species were found on 200 North Carolina rats. Heavier rats were more often and more heavily infested with helminths than lighter rats. Multiple infestations by helminths were common in the North Carolina rats.

JOHNSON, MURRAY L.; CLANTON, C. WESLEY; and GIRARD, JOHN. The sagebrush vole in Washington State. The Murrelet 29(3): 44-47. September-December 1948.

Summary:

"1. Lagurus curtatus pauperrimus(Cooper) has been found in certain areas of restricted habitat in the state of Washington in 1947 and 1948.
2. Features of life habits and habitat have been presented.
3. Because of proved plague infestation, great importance must be attached to this rodent population. Continued work and observation is now being carried out by the State of Washington Department of Health."--M. A. Slattery.

RUDOLF, PAUL O. Porcupine's preferences in pine plantations. Journal of Forestry 47(3): 207-209, illus. March 1949.

A 4½-acre seed source study plantation of red and Scotch pine showed 0.1% of the red pines and 11.6% of the Scotch pines attacked by porcupines. These animals prefer trees at least 3 inches D. b. h. for feeding. Jack pine also is attacked.--N. W. Hosley.

TRYON, C. A., JR. The biology of the pocket gopher, Thomomys talpoides, in Montana. 30 pages. Montana Agricultural Experiment Station, Technical Bulletin 448. December, 1947.

Field studies were made from 1941 to 1946 throughout the state, the most intensive work being accomplished in the Bridger Mountains. All phases of the life history of this pocket gopher are covered.--M. A. Slattery.

MAMMALS--RABBITS

(See also MAMMALS--BIG GAME (DEER), Hough)

BELL, THOMAS A. Concerning the cottontail in Wyoming. Wyoming Wild Life. 12(11): 8-13, 26-27, illus. December 1948.

The author made a study of the Black Hills cottontail in the vicinity of Laramie during the winter of 1948. The 4-section area selected is sagebrush country, typical of the foothills of the Laramie Mountains. The winter food consisted mostly of shrubs (Rocky Mountain juniper, sagebrush, rabbitbrush), prickly pear cactus, grasses, and herbs, in that order. Apparently birds of prey were their greatest natural enemies. The total area population was estimated at around 20.--M. A. Slattery.

MAMMALS--RABBITS--Continued

CHITTY, HELEN. The snowshoe rabbit enquiry, 1943-46. The Journal of Animal Ecology 17(1): 39-44, illus. May 1948.

Reports are analysed from more than 500 observers in Canada, United States, and Alaska. In 1943-4 populations had declined in the prairie provinces and in Nova Scotia. During the next 2 years they had declined throughout the remainder of their range, except in Yukon and Alaska, and had started to recover in Nova Scotia and eastern New England. "This report covers the declining phases of the second 9-11-year cycle in numbers since the start of the Snowshoe Rabbit Enquiry and also the beginning of the recovery phases of a third cycle."

STUDHOLME, C. R. Pennsylvania's cottontail rabbit management study. Pennsylvania Game News 19(8): 10-11,29, illus. November 1948.

A study area of more than 1000 acres is composed largely of abandoned farm lands and woodlots. It is divided in 2 parts, one managed, the other unmanaged. The principal aim in the managed part is to improve cover and food in the same situations. Several types of brush cutting have resulted in improved conditions for grouse, deer, and woodchucks, as well as rabbits.

MAMMALS--MARINE

HAMILTON, J. E. Effect of present-day whaling on the stock of whales. Nature 161(4102): 913-914. June 12, 1948.

Since 1931 there has been a progressive decline in the quality and quantity of the Antarctic catch of whales. In 1937 minimum lengths at which whales could be killed were fixed by international agreement. The lengths set (70 ft. for blue whales, 55 ft. for fin whales, 35 ft. for humpback whales) are below that at which sexual maturity is reached. It is the author's ".....opinion that the stocks of blue whales are showing clear signs of reduction: (1) in the rarity or absence of the huge animals of earlier seasons; (2) in the reduced proportion in the total catch of this species; and (3) in the reduced percentage of mature females which were pregnant. It is also certain that a parallel reduction of the stock of fin whales is now in progress."

BIRDS--BEHAVIOR

ARMSTRONG, EDWARD A. Bird display and behavior, an introduction to the study of bird psychology (Revised edition of Bird Display, published in 1942). 431 pages, illus. Oxford University Press, New York. 1947.

There are chapters on "The Psychological Basis of Nest-building", "The Social Hierarchy in Bird Life", "Dominance and Territory", and 19 other subjects. The many species given as examples are listed; there is a 38-page bibliography; and there are separate bird, subject, and authority indexes. Drawings and photos help to make the book interesting and informative.

BIRDS--BEHAVIOR--Continued

GRIFFIN, DONALD R. and HOCK, RAYMOND J. Experiments on bird navigation. Science 107(2779): 347-349, illus. April 2, 1948.

17 gannets were taken from their nests on an islandoff the Gaspé Peninsula and released 100 miles from salt water in New Brunswick. Of the 9 that were followed from an airplane, 5 returned to their nests within 75 hours. Their flight paths suggest exploration rather than a sense of direction.

BIRDS-COMMUNITIES

STEWART, ROBERT E. Birds of the marshes. The Wood Thrush 4(3): 92-99, illus. January-February 1949.

Principally an account of tide marshes of Delaware, Maryland, and Virginia, giving details of breeding bird life in relation to physical environment and vegetation.

BIRDS--DISEASES

MADSEN, HOLGER. The species of Capillaria (Nematodes, Trichinelloidea) parasitic in the digestive tract of Danish gallinaceous and anatine game birds, with a revised list of species of Capillaria in birds. Danish Review of Game Biology 1(pt.1): 1-112, illus. 1945.

Reference is made to quite a few species of North American birds.

BIRDS--FAUNAS & MANUALS

BAILEY, ALFRED M. Birds of arctic Alaska. 317 pages, illus. The Colorado Museum of Natural History, Popular Series Number 8. April 1, 1948. $4.50, cloth.

"This report is based upon the expedition of The Colorado Museum of Natural History to Arctic Alaska in 1921-22." It includes a long account of this expedition, a description by Joseph Ewan of the vegetation of the arctic slope, a discussion of migration, a long annotated list which includes many records of the period since the expedition, and a long bibliography.

HELLMAYR, CHARLES E. and CONOVER, BOARDMAN. Catalogue of birds of the Americas and the adjacent islands in Field Museum of Natural History. Part I, Number 2. Spheniscidae--Gaviidae--Colymbidae.....Pelecanidae--Sulidae--Phalacrocoracidae.....Ardeidae.....Anatidae. Field Museum of Natural History, Zoological Series 13(pt. 1, no. 2): 1-434. August 18, 1948.

HELLMAYR, CHARLES E. and CONOVER, BOARDMAN. Catalogue of birds of the Americas and the adjacent islands in Field Museum of Natural History. Part I, Number 3. Jacanidae.....Charadriidae--Scolopacidae--Recurvirostridae .....Laridae.....Alcidae. Field Museum of Natural History, Zoological Series 13 (pt. 1, no. 3): 1-383. December 16, 1948.

BIRDS--FAUNAS & MANUALS--Continued

MUNRO, J. A. and COWAN, I. McT. A review of the bird fauna of British Columbia. 285 pages, illus. British Columbia Provincial Museum, Special Publication No. 2. December 1947.

The first part of the book is devoted to a discussion of modifications in environment and descriptions of the 13 terrestial and 2 marine biotic areas of the Province. These areas are designated as follows: Osoyoos-Arid, Dry Forest, Cariboo Parklands, Columbia Forest, Sub-Alpine Forest, Boreal Forest, Peace River Parkland, Southern Alplands, Northern Alplands, Coast Forest, Gulf Islands, Puget Sound Lowlands, Queen Charlotte Islands, Coast Littoral, and Pelagic Waters. Following this there is a list of 491 species and subspecies, with details of their distribution. There is a bibliography of 650 items, divided into three sections, as follows: "Section I. Systematics and Distribution"; "Section II. Anatomy, Biology, Food Habits and Economics"; and "Section III. Miscellaneous." Good photos help to describe the biotic areas. Distribution maps clarify the ranges of a number of species. --M. A. Slattery.

PETERSON, ROGER TORY. How to know the birds. 144 pages, illus. Houghton Mifflin Co., Boston. 1949. $2.00.

This book tells what to look for in the way of distinctive marks, actions, and habitat; characterizes more than 200 species, by families and individually; and describes outstanding habitats. It is an excellent guide for beginners.

RAND, A. L. Birds of southern Alberta. Canada Department of Mines and Resources, National Museum of Canada Bulletin No. 111(Biological Series No. 37). 105 pages, illus. 1948. 25¢.

This brings together information from various sources that has been accumulating since 1894. Following a brief description of the area and its ecology is a long systematic list that has detailed annotations on distribution and behavior.

RAND, A. L. List of Yukon birds and those of the Canol Road. 76 pages, illus. Canada Department of Mines and Resources, National Museum of Canada Bulletin No. 105(Biological Series No. 33). 1946. 25¢.

This is the first list of Yukon birds to be published. The Canol Road extends from the Alaska Highway in southern Yukon northeastward to the Mackenzie River in Northwest Territories. Most of the list deals with distribution; but there is also a description of the area and its avifauna and an account of previous work in Yukon.

WOODBURY, ANGUS M.; COTTAM, CLARENCE; and SUGDEN, JOHN W. Annotated check-list of the birds of Utah. Bulletin of the University of Utah 39(16): 1-40, illus. March 1949 (Biological Series 11(2)). 75¢.

This ".....is a by-product of studies made by the writers since 1926 in gathering material for a work on The Birds of Utah which is now completed."

BIRDS--MORTALITY

ROBBINS, CHANDLER S. and STEWART, ROBERT E. Effects of DDT on bird population of scrub forest. The Journal of Wildlife Management 13(1): 11-16, illus. January 1949.

5 pounds of DDT per acre was applied in an oil spray to a 90-acre tract at Beltsville, Md. in the spring of 1947. Bird populations were studied on a 30-acre plot in the center of this area and in a 30-acre check plot. "Of the five commonest species in the sprayed area, the Maryland yellowthroat, prairie warbler and house wren were reduced 80 per cent, and the red-eyed towhee was apparently reduced 35 per cent; while no appreciable change in the numbers of yellow-breasted chats was noted."

BIRDS--POPULATIONS

STEWART, ROBERT E. and ALDRICH, JOHN W. Breeding bird populations in the spruce region of the central Appalachians. Ecology 30(1): 75-82. January 1949.

In June 1947 the authors censused 4 areas in the red-spruce zone in the Cheat Mountains of West Virginia. They were in (1) virgin spruce-northern hardwood forest, (2) mature second-growth spruce, (3) young spruce, and (4) young deciduous growth. Second-growth and young spruce had about the same species composition as virgin spruce, but there were fewer birds per acre. The deciduous growth, which results from cutting followed by fire, had quite a different species composition as well as fewer birds per acre.

WING, LEONARD. Breeding birds of virgin Palouse prairie. The Auk 66(1): 38-41. January 1949.

The author censused the birds of a 28-acre area southwest of Pullman, Wash. between 1942 and 1947. Most of the area was covered with Festuca-Agropyron grassland in which there were many brushy spots. Brewer sparrow, lazuli bunting, Tolmie warbler, song sparrow, and little flycatcher were associated with the brush and were by far the commonest of a total of 12 breeding species.

BIRDS--WATERFOWL

AYARS, JAMES STERLING. Lead on the loose. Sports Afield 118(6): 25,92-94. December 1947.

The author reviews the occurrence and effects of lead poisoning in waterfowl and describes sites in Illinois, Minnesota, and Michigan of recent actual or potential poisoning. The danger seems greatest on areas deficient in grit. ".....hunters have one practicable means of reducing the amount of lead poisoning; scatter no unnecessary lead pellets in the marshes." Gunshot wounds are another important cause of winter losses in ducks.

COWAN, IAN McTAGGART. Waterfowl conditions on the Mackenzie Delta--1947. The Murrelet 29(2): 21-26. May-August 1948.

The author describes the topography and vegetation of this 4000-square mile area. He found its waterfowl population much smaller than that recorded by E. A. Porsild in 1934. There are detailed notes on 17 species.

BIRDS--WATERFOWL--Continued

CRAIGHEAD, FRANK C., JR. and CRAIGHEAD, JOHN J. Nesting Canada geese on the upper Snake River. The Journal of Wildlife Management 13(1): 51-64, illus. January 1949.

The authors studied nesting on a 40-mile stretch of river in Jackson Hole, Wyoming in the spring of 1947. Nests averaged about 2 to the mile, most of them on islands. The pairs of geese that exhibited nesting behavior were about the same as the number of nests found. 21 broods averaged 4⅓ goslings per brood. 1.2 goslings per total pairs reached the flying stage. Mortality was greatest before and during incubation--mostly due to flooding and ravens.

CRITCHER, T. S. A study of the waterfowl situation in Currituck Sound during the 1947-1948 hunting season. Journal of the Elisha Mitchell Scientific Society 64(2): 176-177. December 1948.

This is an abstract of a paper presented at the forty-fifth annual meeting (1948) of the North Carolina Academy of Science. 25 species of waterfowl were observed. The dominant game species were coot, Canada goose, canvas-back and ruddy duck. Females exceeded males by over 300% in 1574 birds killed by hunters. The total population exceeded that of 1946-1947 by more than 80,000 birds, probably due to an increase in food.

DARROW, ROBERT W. Our duck band returns. New York State Conservationist 3(3): 12-13, illus. December-January 1948-1949.

Returns from game farm mallards indicate that their rearing and release augments hunting opportunity in many parts of the state. A substantial proportion of the birds that survive the first hunting season (about 20% of those liberated) return to the locality where they were liberated. 5 weeks is the best age for liberation. ".....banding furnishes a highly valuable research tool, especially for studying wide-ranging species such as waterfowl."

JOHNSON, ROBERT H. A new method of erecting wood duck nesting boxes. Pennsylvania Game News 18(9): 9, illus. December 1947.

In Massachusetts, boxes on poles in marshes were used more than those on trees (90% against 40%).

MENDALL, HOWARD L. Food habits in relation to black duck management in Maine. The Journal of Wildlife Management 13(1): 64-101, illus. January 1949.

"As one phase in a black duck research program, a food habits study was carried out in Maine from 1938 to 1946 inclusive. A total of 605 stomachs was collected." Maine black ducks use 3 general habitats: inland fresh water, inland tide water, and coastal water. Stomachs were collected in fall from each of these habitats, in winter from the open coastal waters, and in spring and summer from fresh waters. Food tabulations are given for each season and habitat. In fall and spring marsh and water plants predominated. Winter food and food of downy young was largely animal. Water levels are the most important factor influencing black duck food habits; other factors are food abundance, food preference, and hunting pressure.

BIRDS--WATERFOWL--Continued

NEFF, JOHNSON A. Colorado's mallards come home. Colorado Conservation Comments 10(8): 5-8,27-28, illus. December 1948.

A duck banding project begun in Colorado in the fall of 1944 was continued through the winter of 1947-48. Its aim was to learn the movements of the mallards involved in winter damage to farm crops. Recoveries were from many states, but a very large proportion were from Colorado. Two-thirds of the birds were killed in the season following the one in which they were banded; one-fourth were killed in the second season.

QUEENY, EDGAR M. Prairie wings; pen and camera flight studies. 256 pages, illus. J. B. Lippincott Company, Philadelphia. 1947. $15.00.

There are more than 200 high speed telephotos by the author and many explanatory drawings by Richard E. Bishop in this account of the flight of ducks. The Grand Prairie country of Arkansas furnished the material for both the flight studies and hunting reminiscences.

WRIGHT, BRUCE S. Waterfowl as a forest product of eastern Canada. The Forestry Chronicle 24(4): 266-269. December 1948.

The author discusses the significance of the black duck in this region and outlines a plan for the investigation of migratory game.

BIRDS--FISH-EATERS

BRECKENRIDGE, W. J. Minnesota's birds of the waterways. 34 pages, illus. Minnesota Department of Conservation, Conservation Bulletin Number 11. 1947.

The economic and esthetic value of 5 groups of birds are discussed: (1) loons and grebes, (2) cormorants and pelicans, (3) herons, (4) rails, (5) gulls and terns.--M. A. Slattery.

PAYNTER, RAYMOND A., JR. The fate of banded Kent Island herring gulls. Bird-Banding 18(4): 156-170. October 1947.

Between 1934 and 1945, the Bowdoin Scientific Station banded 36,000 gulls on Kent Island, New Brunswick. More than 34,000 were young, and from these there have been 1252 returns. There have been 121 returns from adults. More than half of all the returns were of birds found dead. Tables show the fate of the birds, where they were taken, and the age of recovery of birds banded as young.

BIRDS--UPLAND GAME (GENERAL)

ALLEN, DURWARD L. Where do we stand on artificial restocking? Virginia Wildlife 10(4): 16-18, illus. April 1949.

Stocking quail and pheasants in already populated fair-to-poor range has not paid. "We need wholesale production and only Nature can give it to us." In contrast, introduction of a species in a suitable range where it does not occur at all has a proper place in game management.

BIRDS--UPLAND GAME (GENERAL)--Continued

TEMPLE, LAWRENCE. Upland game birds of Oklahoma. Second edition. 32 pages, illus. Oklahoma Game and Fish Department, Oklahoma City. January 1948.

General descriptions and status in Oklahoma of bobwhite, wild turkey, mourning dove, greater and lesser prairie chickens, pheasant, and scaled quail; brief notes on a few other species.

YEATTER, RALPH E. Bird dogs in sport and conservation. Illinois Department of Registration and Education, Natural History Survey Division, Circular 42. 64 pages, illus. December 1948.

Since Professor Wight first used his setters in pheasant population studies in Michigan, hunting dogs have given valuable aid in various kinds of game research and management work. Long before that, retrievers were keeping down a serious loss from crippling. The author discusses the selection and training of bird dogs and describes important breeds. Good photos show them in action.

BIRDS--UPLAND GAME (BOBWHITE)
(See also BIRDS--UPLAND GAME (PHEASANT), Spencer)

ALLEN, RALPH H., JR. and PEARSON, ALLEN M. February foods of quail. Alabama Conservation 20(8): 8,28-29, illus. February 1949.

A summary of the foods found in 251 crops taken in southeastern Alabama in 1937-1945. 28% of all food was common lespedeza. Oaks, beggarweeds, pines, sweetgum, milk peas, and perennial lespedezas totaled 47% more.

ALLEN, RALPH H., JR. and PEARSON, ALLEN M. What quail eat in January. Alabama Conservation 20(7): 7,13. January 1949.

A summary of the foods found in 370 crops taken in southeastern Alabama in 1928 and 1937-1945. Two-thirds of all food was legumes. The 7 commonest foods were common lespedeza, beggarweeds, oaks, pines, peanut, milk peas, and partridge peas. They totaled 75% of all food.

COLE, LEON J.; STODDARD, HERBERT L.; and KOMAREK, E. V. Red bob-white--a report and correction. The Auk 66(1): 28-35, illus. January 1949.

The "red quail" condition, genetically, is an imcomplete dominant which appears occasionally in broods of normal birds. It appears to have occurred most frequently at Grand Junction, Tennessee. This strain seems to be weaker, to have a poorer reproductive capacity, and in other respects to be less well adapted to survive in the wild than normally colored birds. --John W. Aldrich.

BIRDS--UPLAND GAME (PHEASANT)

BROWN, E. K. More pheasants from federal aid. Colorado Conservation Comments 10(8): 3-4. December 1948.

Several recent pheasant surveys in Colorado have shown that wherever the pheasant population does not increase there is lack of sufficient winter feed and cover. Cover is needed most of all.

BIRDS--UPLAND GAME (PHEASANT)--Continued

FERREL, CAROL M.; TWINING, HOWARD; and HERKENHAM, NORMAN B. Food habits of the ring-necked pheasant (Phasianus colchicus) in the Sacramento Valley, California. California Fish and Game 35(1): 51-69, illus. January 1949.

Food habits of both adults and young were studied in 1946 on a 500-square-mile area, mostly in Butte County. Rice was the principal food of adults; barley, wheat, and Echinochloa crusgalli were next in importance. The food of week-old chicks was nearly all insect (mostly small beetles). Animal food decreased as the chicks grew older. Tables list all food items recorded and show the seasonal succession of the principal food classes.

KIMBALL, JAMES W. The crowing count pheasant census. The Journal of Wildlife Management 13(1): 101-120, illus. January 1949.

Data on crowing counts were collected over a period of 4 years in Nebraska, Minnesota, and South Dakota. They include 304 mornings' work and 162,940 recorded cock calls. The author describes procedure for conducting a crow count census and analyzes various factors in making and interpreting such censuses. "As conducted in South Dakota, the crowing count produces more accurate results than the roadside census and does it at one-third the cost. Crowing counts can be applied equally well to small or large areas and to low or high populations."

LAWSON, W. D. Pheasants in trouble. Pennsylvania Game News 18(6): 11,38-39, illus. September 1947.

The author describes studies of Pennsylvania pheasant range made by Pierce E. Randall in 1938-1940 and by himself in 1947. Standing corn is a favorite winter habitat. There has been a reduction in the amount of standing corn, and this may be a cause of the present low pheasant population. There appears to have been a reduction in nesting cover, also.

SPENCER, DON. Improving pheasant and quail shooting through the planting of feed patches. Pennsylvania Game News 19(2): 6,18,20,23, illus. May 1948.

This article contains nearly the same material as the author's "Improving pheasant shooting by planting of feed patches" in the July 1948 Ohio Conservation Bulletin. This was abstracted on page 38 of Wildlife Review No. 55.

BIRDS--UPLAND GAME (WILD TURKEY)

CULBERTSON, L. B. Annual variation of the winter foods taken by wild turkeys on the Virginia state forests foods. Virginia Wildlife 9(9): 14-16, illus. September 1948.

175 crops and stomachs furnish the data for this article. They were taken between 1938 and 1946, mainly from the Cumberland and Buckingham-Appomattox State Forests. Oaks were the most important food group. Dogwoods, grasses, and Japanese honeysuckle were next in importance. A table shows yearly variation in the use of different oaks. Another table shows the principal foods for the entire period.

BIRDS--UPLAND GAME (WILD TURKEY)--Continued

HART, DENNIS. Virginia's turkey restoration program. Virginia Wildlife 9(12): 19-20, illus. December 1948.

"Briefly, the Virginia system, unique among the forty-eight states, is this: Flocks of native wild trapped hens, or captivity reared progeny of such hens, are wing clipped to prevent flight and placed in fenced acre lots during early spring in normal turkey habitat known to be frequented by wild toms. The wild toms, seeking mates, enter the pens and fertilize the eggs that are to be laid. The eggs are gathered daily and from that point on are processed by more or less standard techniques."

KOZICKY, EDWARD W. and METZ, ROSS. The management of the wild turkey in Pennsylvania. Pennsylvania Game News 19(4): 3,20-21,26-27,30-31, illus. July 1948.

Statewide management techniques are protection, refuges, restocking, habitat control winter feeding, predator control, and evaluation of range and populations. The authors discuss the function and practice of each.

WHEELER, ROBERT J., JR. The wild turkey in Alabama. 92 pages, illus. Alabama Department of Conservation. Montgomery. 1948.

A wildlife inventory taken between 1939 and 1942 indicated ".....the necessity of a State-wide rehabilitation program if the turkey was to be maintained as an important game species." An investigation and management project was completed in Clarke County between 1942 and 1946. Optimum range is well-watered forest, 50% hardwood, with well-distributed clearings. "Well-distributed forest clearings are the key to a turkey management program in Alabama....." "Minimization of human disturbance and the exclusion of livestock and dogs are absolutely essential."

BIRDS--UPLAND GAME (CHUKAR, ETC.)

BEER, JAMES R. Notes on the food habits of some western grouse. The Murrelet 29(2): 18-19. May-August 1948.

The author examined crops, gizzards, and droppings of white-tailed ptarmigan, Franklin grouse, and ruffed grouse that were taken in Washington and northwestern Montana in the early 1940's.

KINGHORN, ROBERT G. and NEFF, JOHNSON A. Status of the band-tailed pigeon in Colorado, season of 1947. 13 pages. Colorado Dept. of Game & Fish, Denver. July 1948.

LACK, DAVID. The significance of clutch-size in the partridge (Perdix perdix). The Journal of Animal Ecology 16(1): 19-23. May 1947.

The first laying in England varies from 10 to 20 eggs; late layings are smaller. Average size of first layings vary from year to year. "Clutch-size is considered to be selected through the food available for the brood...."

BIRDS--UPLAND GAME (CHUKAR, ETC.)--Continued

RUTHERFORD, ROBERT M. The chukar makes good. Outdoors 17(3): 10-11. March 1949.

Chukars are thriving in Nevada and in arid parts of Washington and California. Nevada had an open season in 6 counties in the fall of 1948. The conditions in these areas are similar to those in their native range in Asia and around the Mediterranean.

BIRDS--HAWKS & OWLS

DRIVER, ERNEST C. Mammal remains in owl pellets. The American Midland Naturalist 41(1): 139-142. January 1949.

The author presents a "Key to Mammal Skulls and Remains Commonly Found in Owl Pellets."

LANGE, HALFDAN. Slørugens (Tyto alba guttata (Brehm)) Føde, belyst gennem Undersøgelser af Gylp. (The food habits of the barn owl based on analysis of pellets). Dansk Ornithologisk Forenings Tidskrift 42(2): 50-84. 1948. (copied from Bird-Banding for January 1949, page 57).

A review by Donald S. Farner says that this study is based on the analysis of about 14,000 pellets collected 1932-1943 in 37 localities in Denmark. 80% of the diet was shrews, voles, and house mice. More shrews were eaten in Jutland than on the islands, more voles and house mice on the islands. Winter and summer diets were not greatly different.

HEILDE, GORDON M. The 1945-46 snowy owl incursion in New York state. Bird-Banding 19(2): 51-59. April 1948.

This was one of the greatest incursions on record. 1104 birds were recorded, of which 839 were collected. Most of them were along watercourses and shorelines. They tended to stay in a particular locality for extended periods.

STEWART, ROBERT E. Ecology of a nesting red-shouldered hawk population. Wilson Bulletin 61(1): 26-35, illus. March 1949.

A population of 51 pairs of red-shouldered hawks was studied in the Patuxent River valley near Laurel, Md. in 1947. The population density was 1 pair per .8 square mile in suitable habitat (flood plain forest). There was an inverse correlation between width of the flood plain and the distance between nests. The red-shouldered hawk and barred owl were commonly associated in the same bottomland habitat, but other raptores were largely restricted to upland habitats. Young red-shouldered hawks averaged 2.7 in 47 occupied nests. The food fed to nestlings was composed of mice, moles and shrews, 23%; snakes, 19%; small birds, 14%; lizards, 14%; rabbits, 9%; frogs and toads, 9%; mourning doves and bob-whites, 5%; small snapping turtles, 5%; beetles, 2%.-- John W. Aldrich.

BIRDS--HAWKS & OWLS--Continued

TINBERGEN, L. De Sperwer als Roofvijand van Zangvogels. Ardea 34: 1-213. Reprinted in book form E. J. Brill, Leiden. 1946. (Copied from The Journal of Animal Ecology for November 1947, page 226).

A review by H. N. Southern says "It is made quite clear that the work was undertaken to discover whether the sparrowhawk under the given circumstances was responsible for a substantial fraction of the total mortality suffered by the prey." The sparrowhawk discussed is Accipiter nisus and its prey are house sparrow, chaffinch, great tit, and coal tit. Basic data are the breeding population and productivity of predator and prey. It is an important study.

BIRDS--SONGBIRDS

GEORGE, JOHN L. and MITCHELL, ROBERT T. Calculations on the extent of spruce budworm control by insectivorous birds. Journal of Forestry 46(6): 454-455. June 1948.

Observations in the Adirondacks in 1946 lead the authors to conclude that birds cannot control a spruce budworm outbreak by themselves. However, with other natural control forces they can help to prevent this insect from building up heavy populations.

HAMMER, MARIE. Investigations on the feeding-habits of the house-sparrow (Passer domesticus) and the tree-sparrow (Passer montanus). Danish Review of Game Biology 1(pt. 2): 1-59, illus. 1948.

2657 adult and young house sparrows were collected from more than 30 localities in Denmark from 1941 to 1944. Grains were the principal food. Many weed seeds were eaten in autumn and many insects were eaten from April to August. 500 tree sparrows fed more on weed seeds and insects, much less on grain.

REPTILES & AMPHIBIANS

ALLEN, E. ROSS and SWINDELL, DAVID. The cottonmouth moccasin of Florida. Herpetologica 4 (First supplement): 1-16, illus. November 1948.

This is one of the most useful collections of information about the natural history of the cottonmouth that has appeared. Data is organised under the following headings: range, general appearance, identification characters for laymen, vision, dimensions, scale counts, habits, food, how food is obtained, behavior, locomotion, shedding, copulation, birth records, enemies, parasites and diseases, fangs, record of fang shedding, and venom. Photographs show the prehensile nature of the tail, contrast the patterns of young and old, show a cottonmouth being killed by a kingsnake, cottonmouths around a drying water hole, a cottonmouth biting under water, and a litter of young still in their embryonic sacs.--Wm. H. Stickel.

REPTILES & AMPHIBIANS--Continued

BRAGG, ARTHUR N. Observations on the life history of Pseudacris triseriata (Wied) in Oklahoma. The Wasmann Collector 7(4): 149-168. December 1948.

The breeding habits and habitats of the striped chorus frog in Oklahoma are described. Subjects discussed include nomenclature; variation; breeding stimulus; eggs; hatching, development, respiratory rate and habits of tadpoles; and geographic variation in habitat, call, eggs and tadpoles. --Wm. H. Stickel.

BROOKS, MAURICE. Notes on the Cheat Mountain salamander. Copeia 1948 (4): 239-244, illus. December 1948.

All that is known of the ecology and natural history of Plethodon nettingi is summarized. Topics discussed include range, habitat, seasonal and daily activities and their correlation with humidity, coloration, breeding, and associated species.--Wm. H. Stickel.

FOX, WADE. Effect of temperature on development of scutellation in the garter snake, Thamnophis elegans atratus. Copeia 1948(4): 252-262, illus. December 1948.

Experiments indicate that snakes kept in a cool room produce young having significantly lower numbers of scales and lateral blotches than do the young of those kept in a warm room. If this conclusion, or a similar one, proves to be true of snakes in general the results may be far reaching in reptilian taxonomy.--Wm. H. Stickel.

GILES, LeROY W. and CHILDS, VANDIVER L. Alligator management of the Sabine National Wildlife Refuge. The Journal of Wildlife Management 13(1): 16-28. January 1949.

30 years ago the marsh that comprises this 142,000-acre refuge had a very large population of waterfowl, alligators, and fur animals. In the 1920's canals were dug through it and fur was systematically trapped in winter and alligators hunted the rest of the year. Alligators were soon greatly reduced, but since the establishment of the refuge in 1935 they have slowly recovered. In the summer of 1946 they were systematically hunted on three-fourths of the refuge, and more than 1000 were taken. There was an estimated total population of 15,000. The contents of 318 stomachs were analyzed. The most important food of the smaller alligators was crustaceans (mostly Cambarus). The most important foods of the larger ones were snakes, turtles, muskrats, and fishes. The value of alligators is greater than the value of the muskrats they eat. Alligator activity in keeping ponds open is beneficial to waterfowl. The authors present much information on environment, size and distribution of population, food, and breeding.

REPTILES & AMPHIBIANS --Continued

HAIRSTON, NELSON G. The local distribution and ecology of the plethodontid salamanders of the southern Appalachians. Ecological Monographs 19(1): 47-73, illus. January 1949.

This article reports the results of intensive field studies that centered in the Black Mountains of North Carolina. 12 species and subspecies were collected in this area. Their local distribution was determined by vertical and horizontal transects. The author found (1) a striking altitudinal separation of 2 species of Plethodon, (2) a series from aquatic to terrestrial in Leurognathus and 4 species of Desmognathus, (3) a progression of nocturnality in the 4 species of Desmognathus, and (4) a tendency in Desmognathus to feed on animals living near the shelter-niches.

KNOWLTON G. F.; TAYLOR, E. J.; and HANSON, W. J. Insect food of Uta stansburiana stansburiana in the Timpie area of Utah. Herpetologica 4(6): 197-198. December 1948.

The food items found in 1124 stomachs of this lizard are listed. Insects of many orders were represented, chiefly Orthoptera, Hemiptera, Homoptera, Coleoptera, Lepidoptera, Diptera, and Hymenoptera. Several economically injurious insects were eaten in quantity, but relatively few benefical insects were eaten. --Wm. H. Stickel.

MILLS, R. COLIN. A check list of the reptiles and amphibians of Canada. Herpetologica 4(Second supplement): 1-15. December 1948.

This publication should be of value to all persons interested in North American herpetology or zoogeography. The full scientific name and one or more common names are given for each form. Ranges are given in commendable detail. There are many notes on questionable or isolated localities, the source of introductions, intergradation between subspecies, color phases, abundance, and expected range extensions. The author mentions very few references and cites none fully. The value of the work would have been much increased by a bibliography, or by the insertion in the text of the more important references.--Wm. H. Stickel.

MITTLEMAN, M. B. and BROWN, BRYCE C. The alligator in Texas. Herpetologica 4(6): 195-196. December 1948.

Locality records are given to delimit the former range of the alligator in Texas and its status in the known present localities. "The rapid spread of industry and agriculture in eastern Texas is surely the precursor of extinction for the alligator."--Wm. H. Stickel.

NORRIS, KENNETH S. Arboreal habits and feeding of the grid-iron tailed lizard. Herpetologica 4(6): 217-218, December 1948.

In August 1947, 3 specimens of Callisaurus draconoides gabbii were seen in low bushes in Riverside County, California. In order to explain this behavior stomachs of 22 specimens from southern California were examined. They contained various insects, a young Uta, and some leaf tips, flowers and fruiting heads. The plant material may or may not have been taken as food. It is thought that the lizards climbed the bushes for temperature regulation rather than in search of food.--Wm. H. Stickel.

REPTILES & AMPHIBIANS--Continued

SMITH, PHILIP W. Food habits of cave dwelling amphibians. Herpetologica 4(6): 205-208. December 1948.

Foods of 16 Eurycea lucifuga and 40 Typhlotriton spelaeus (35 larval, 5 adult) from a Missouri cave were analyzed, and a survey was made of the relative abundance of the potential food organisms. The more abundant organisms, an isopod and a helomyzid fly, dominated in the diet. The two salamanders lived in the same habitat and appeared to be in competition for the same foods. It was not possible to determine whether one species of salamander was dominant over the other as Lack's rule requires under these circumstances.--Wm. H. Stickel.

VORHIES, CHARLES T. Food items of rattlesnakes. Copeia 1948(4): 302-303, illus. December 1948.

It is suggested that the primary food of small western rattlesnakes is lizards, not, as often stated, small mammals. A Willard's rattlesnake ate small lizards and a spotted night snake. A new-born western diamondback attempted to eat a horned lizard, but its body was pierced by the lizard's spines and both died. A spotted night snake fed readily on small lizards. --Wm. H. Stickel.

INVERTEBRATES (GENERAL)

FENTON, G. R. The soil fauna: with special reference to the ecosystem of forest soil. The Journal of Animal Ecology 16(1): 76-93, illus. May 1947.

The author classifies the animals according to their food habits and effects on the soil. He describes the factors at play in the formation of mull and of podsol and the function of animals in the nitrogen cycle. There is a list of approximately 350 references.

HOFFMANN, C. H. and others. Field studies on the effects of airplane applications of DDT on forest invertebrates. Ecological Monographs 19(1): 1-46, illus. January 1949.

3 areas in Pennsylvania and Maryland were sprayed with DDT in 1945. The faunas of these and 2 check areas were studied in detail. Arthropods varied greatly in susceptibility; but so many factors were involved that the authors consider these studies as only preliminary. They conclude ".....that a single airplane application of DDT to a forest at the rate of 1 pound per acre--enough to control many forest pests--does not seriously damage the general arthropod fauna,..." and that "an application of 5 pounds of DDT per acre threatens near extermination of many harmless or beneficial species, and may result in harm to the forest through encouragement of aphid and mite outbreaks."

MOLLUSKS
(See also WATER, Tucker & Bidwell)

MORRIS, PERCY A. A field guide to the shells of our Atlantic coast. 190 pages, illus. Houghton Mifflin Co., Boston. 1947. $3.50.

This manual describes all the larger and commoner species of pelecypods and gastropods that occur from Maine to Florida. It also describes some of the minute, rare, and deep-water species. Full-page photos--about one-fifth of them in color--illustrate the species. The facing pages list each species, with 1 or 2 of its characteristics; the scale of the picture, and the page on which it is described. The descriptions include interesting information on habits, habitats, and uses. There are no keys.

ROBERTSON, IMOGENE C. STRICKLER and BLAKESLEE, CLIFFORD L. The mollusca of the Niagara frontier region and adjacent territory. Bulletin of the Buffalo Society of Natural Sciences 19(3): i-xii, 1-191, illus. 1948.

This fauna covers western New York, east nearly to Rochester, and the part of Ontario that lies between Lakes Erie and Ontario. Most of this area is glaciated. About three-fourths of it drains to the St. Lawrence, one-fourth to the Mississippi. Most of the species are illustrated with clear black and white photos; their morphology and habitats are briefly described; and localities are given by counties. There is a bibliography, a section on collection, a description of many collecting sites, and a history of local conchological work.

INSECTS

LA RIVERS, IRA. A synopsis of Nevada Orthopera. The American Midland Naturalist 39(3): 652-720. May 1948.

The author describes the environment and lists 140 species. There are keys, localities, ecological notes, and approximately 175 references.

TINKHAM, ERNEST R. Faunistic and ecological studies on the Orthoptera of the Big Bend region of Trans-Pecos Texas, with especial reference to the Orthopteran zones and faunae of midwestern North America. The American Midland Naturalist 40(3): 521-663, illus. November 1948.

This region has 150 known species of Orthoptera. The author discusses them in detail, and includes a description of the vegetation and the way it has been changed by overgrazing.

VEGETATION--COMMUNITIES

CHAPMAN, V. J. The application of aerial photography to ecology as exemplified by the natural vegetation of Ceylon. Indian Forester 73(7): 287-314, illus. July 1947.

Air and ground studies made in 1945 are the background for this article. Some previous knowledge of the soil geology, rainfall, and vegetation helped in the present interpretation. A large number of photos, several maps, and several diagrammatic profiles of plant communities indicate the usefulness of aerial photography in a study of vegetation.

VEGETATION--COMMUNITIES--Continued

WATT, ALEX S. Pattern and process in the plant community. The Journal of Ecology 35(1 & 2): 1-22, illus. December 1947.

The author discusses the plant community as a working mechanism and gives British examples. He emphasizes that"....many problems in nature are problems of the ecosystem rather than of soil, animals or plants....."

VEGETATION--FLORAS & MANUALS

BLOMQUIST, H. L. The grasses of North Carolina. 276 pages, illus. Duke University Press, Durham, N. C. 1948. $7.50.

This manual is based on 12 years of study. It describes 360 species and varieties. There are keys, brief descriptions, many good drawings, information on habitat and distribution, and maps. The introduction discusses the distribution and ecology of introduced grasses and native grasses of beaches and marshes, coastal plain, piedmont, and mountains.

BROCKMAN, C. FRANK. Flora of Mount Rainier National Park. 170 pages, illus. U. S. D. I., National Park Service. 1947. 75¢ from Government Printing Office.

This flora has keys, descriptions, and many photos. Emphasis is given to the showy flowers. Grasses and sedges are merely listed.

FRYE, T. C. and CLARK, LOIS. Hepaticae of North America. Part V. Uviversity of Washington Publications in Biology 6(5): 735-1022, illus. 1947. $4.50. (copied from January 1949 Madrono, page 30).

A review by Annetta Carter includes the following comments: "With the appearance of Part V.....we have available for the first time in this country a reference work treating all of our liverworts." "The 'List of References' contains nearly 600 entries....." "In addition to detailed descriptions and illustrations of many of the plants treated, the relationships and the developmental trends in many genera are discussed as well as the characters that are used in the keys."

McDOUGALL, W. B. Checklist of plants of Grand Canyon National Park. 3rd edition. 126 pages, illus. Grand Canyon Natural History Association, Bulletin No. 10. January 1947. 50¢.

Has detailed notes on distribution within the park.

OGDEN, E. C.; STEINMETZ, F. H.; HYLAND, F. Check-list of the vascular plants of Maine. Bulletin of the Josselyn Botanical Society of Maine No. 8. 70 pages, illus. Orono, Maine. August 1948. 50¢ from Dr. F. H. Steinmetz, Coburn Hall, University of Maine, Orono, Maine.

This tabular list shows occurrence by counties. It comprises 2018 species.

VEGETATION--FLORAS & MANUALS--Continued

ROLAND, A. E. The flora of Nova Scotia. 552 pages, illus. Reprinted from Proceedings of Nova Scotian Institute of Science, volume 21, part 3, 1944-1945. Truro Printing & Publishing Co. Ltd., Truro, Nova Scotia.

The introduction discusses physical background, history of knowledge of the flora, and general distribution of the plants. There are keys to families, genera, and species, drawings of about 700 plants, and distribution maps of about 125. Altogether 1202 species are treated. They include all the vascular plants except grasses. The grasses were described by W. G. Dore and A. E. Roland in Proceedings of Nova Scotian Institute of Science 20:177-288. 1942.

TURNER, GEORGE H. Plants of the Edmonton district of the Province of Alberta. The Canadian Field-Naturalist 63(1): 1-28. January-February 1949.

An annotated list based on many years of collecting within 50 miles of Edmonton. It is introduced by a description of the area's topography, soil, and vegetation.

VEGETATION--HABITATS

GATES, FRANK C. Field manual of plant ecology. 137 pages, illus. McGraw-Hill Book Company, Inc., New York. 1949.

This manual is based on the course given by the author at the University of Michigan Biological Station during 32 summers. It emphasizes studying the plants themselves with a minimum of apparatus. The subject matter is presented in 60 exercises. The study of quadrats occupies 12 exercises, tree counts 4 exercises, aquatic conditions 9 exercises, habitat factors 13 exercises, and so on.

VEGETATION--FOREST

BROWN, C. W. and HOGE, W. C. Forest resources of northern Montana. 19 pages, illus. Northern Rocky Mountain Forest & Range Experiment Station, Station Paper No. 13. June 1948.

This region comprises more than 31 million acres of land in 19 counties. Only 3% is forested. There are 3 broad groups of forest: river bottom hardwood (principally cottonwood), semiarid ponderosa pine, and western mountain forest. Data are based on the study of maps and aerial photos and the field examination of plots.

BURNHAM, C. F.; FERREE, M. J.; CUNNINGHAM, F. E. The aspen-gray birch forests of the anthracite region. 20 pages, illus. Northeastern Forest Experiment Station, Station Paper No. 7. August 1947.

The anthracite region comprises 15 counties in northeastern Pennsylvania. Aspen-gray birch occupies about 98,000 acres. "It generally is found where northern hardwood forests have been burned over after logging." There is no saw timber. The authors describe the forest and discuss ways of improving it. There are brief descriptions of 3 forest sites.

VEGETATION--FOREST--Continued

BURNHAM, C. F.; FERREE, M. J.; CUNNINGHAM, F. E. The chestnut oak forests of the anthracite region. Northeastern Forest Experiment Station, Station Paper No. 9. 28 pages, illus. September 1947.

This bulletin was not seen. From the map in the bulletins on the 6 other forest types of the anthracite region (15 counties in northeastern Pennsylvania) it appears that the chestnut oak forestsoccur only along mountain ridges in the southern half of the region.

BURNHAM, C. F.; FERREE, M. J.; CUNNINGHAM, F. E. The northern hardwood forests of the anthracite region: their present condition and possible treatment. 31 pages, illus. Northeastern Forest Experiment Station, Station Paper No. 1. March 1947.

The anthracite region comprises 15 counties in northeastern Pennsylvania. Northern hardwoods dominate the highlands across the northern counties of the region. They occupy nearly 29% of the forest land and contain nearly half of the saw timber. The principal species are sugar maple, red maple, beech, red oak, black cherry, hemlock, basswood, white ash, yellow birch, black birch, and yellow poplar. The authors describe the forest and how to improve saw-timber, pole-timber, and seedling-and-sapling stands. There are brief descriptions of 3 forest sites.

BURNHAM, C. F.; FERREE, M. J.; CUNNINGHAM, F. E. The red oak-white oak forests of the anthracite region: their present condition and possible treatment. 33 pages, illus. Northeastern Forest Experiment Station, Station Paper No. 2. May 1947.

The anthracite region comprises 15 counties in northeastern Pennsylvania. Red oak-white oak occupies 28% of the forest land. It has been heavily cut and burned and now is in very poor condition. The authors describe the forest and how to improve saw-timber, pole-timber, and seedling-and-sapling stands. There are brief descriptions of 3 forest sites.

BURNHAM, C. F.; FERREE, M. J.; CUNNINGHAM, F. E. The scrub oak forests of the anthracite region: their present condition and possible treatment. 9 pages, illus. Northeastern Forest Experiment Station, Station Paper No. 4. May 1947.

The anthracite region comprises 15 counties in northeastern Pennsylvania. The present scrub oak acreage (230,000) is due mostly to heavy cutting and repeated fires. If fires are kept out most of it will be replaced by sassafras, red maple, chestnut oak, and red oak.

BURNHAM, C. F.; FERREE, M. J.; CUNNINGHAM, F. E. The white pine-hemlock forests of the anthracite region: their present condition and possible treatment. 25 pages, illus. Northeastern Forest Experiment Station, Station Paper No. 11. November 1947.

The anthracite region comprises 15 counties in northeastern Pennsylvania. White pine-hemlock occupies less than 8% of the forest land but accounts for one-quarter of the saw-timber area. It is found chiefly on well-drained slopes and in ravines. The authors describe the forest and how to improve saw-timber, pole-timber, and seedling-and-sapling stands. There are brief descriptions of 3 forest sites.

VEGETATION--FOREST--Continued

BURNHAM, C. F.; FERREE, M. J.; CUNNINGHAM, F. E. The white pine-oak forests of the anthracite region: their present condition and possible treatment. 35 pages, illus. Northeastern Forest Experiment Station, Station Paper No. 8. August 1947

The anthracite region comprises 15 counties in northeastern Pennsylvania. White pine-oak occupies one-fifth of the forested area, mostly in the rolling foothills of the central and southern counties. The area occupied by saw-timber stands is very low. The authors describe the forest and how to improve saw-timber, pole-timber, and seedling-and-sapling stands. There are brief descriptions of 3 forest sites.

DUERR, WILLIAM A. Forest statistics for the Arkansas Ozarks. 23 pages, illus. Southern Forest Experiment Station, Forest Survey Release 57. September 1948.

This region comprises 24 counties. 60% of the land is forested, but only 17% is in saw-timber stands. Upland hardwood and upland hardwood-pine cover 79% of the total forest. The remainder is shortleaf pine, bottomland hardwood, and cedar. A map shows the relation of the region to the 4 other forest regions of the state. Another map shows the distribution of the principal forest types. Data are based on the study of aerial photos and the field examination of plots.

EYRE, F. H. and ZEHNGRAFF, PAUL. Red pine management in Minnesota. U. S. D. A., Circular No. 778. 70 pages, illus. May 1948. 20¢ from Government Printing Office.

The authors describe the ecology of virgin red pine forests, and of the present, mostly second-growth, forests in northern Minnesota. On page 38 they describe the damage done to red pine by snowshoe hares, white-tailed deer, porcupines, white-footed mice, chipmunks, red squirrels, and birds.

FORBES, STANLEY E. and HARNEY, JOHN E. The bulldozer--friend or foe? Pennsylvania Game News 19(9): 10,24, illus. December 1948.

Bulldozing a pole stage northern hardwoods forest near Emporium, Pa. in the spring of 1946 increased cover immediately and increased fruit production within a year. Since then bulldozers have been used experimentally throughout the state, with varying results.

INESON, FRANK A. Forest resources of Elk, Forest, McKean, and Warren Counties, Pennsylvania. 30 pages, illus. Northeastern Forest Experiment Station, Forest Survey Release No. 1. October 1948.

These Allegheny Plateau counties are 84% forested. They include the 458,000-acre Allegheny National Forest. Within them the state owns 192,000 acres, of which almost two-thirds is game land. The principal forest types are northern hardwood (about two-thirds of the total), aspen, oak, and hemlock. The bulk of the forest is pole size second-growth. An explanation of terms includes a brief description of the forest types and a list of species. Data were obtained from the study of aerial photos and the field examination of plots.

VEGETATION--FOREST--Continued

INESON, FRANK A., and FERREE, MILES J. The anthracite forest region, a problem area. U. S. D. A., Miscellaneous Publication No. 648. 71 pages, illus. 1948. 40¢ from Government Printing Office.

While coal mining is the keystone of the region's economy, nearly two-thirds of the land is forested, and the forests could be made much more productive. The authors describe ways in which the forests have been misused, attempts at improvement, forest industries, the present situation, and the forest potential. They present a program for immediate action and a long-range program. There are many useful maps, graphs, photos, and tables.

McLEOD, J. W. The forests of Prince Edward Island. The Forestry Chronicle 24(3): 191-194. September 1948.

Today, the forests cover 23% of the land area. They are mostly second growth and are mostly in farm woodlots and even aged. Some submarginal farm land is reverting to forest. The author outlines the conditions for sustained yield.

ROBERTS, E. V. and others. Forest resources of the eastern Ozark region in Missouri. 21 pages, illus. Central States Forest Experiment Station, Forest Survey Release No. 1. February 1948.

This region comprises more than 6 million acres in 14 counties. A map shows its relation to the 4 other forest regions of the state. More than two-thirds of the area is forested. Saw-timber stands occupy only 14% of the forest area. More than 70% of the saw timber is oak. There is a brief description of the forest types (shortleaf pine, cedar-hardwoods, oak-pine, oak-hickory, white oak, bottomland hardwoods, scrub hardwoods) and a list of species. Data are based on the study of aerial photos and the field examination of plots.

ROBERTS, E. V., and others. Forest resources of Missouri. 19 pages, illus. Central States Forest Experiment Station, Forest Survey Release No. 6. September 1948.

A map shows the 5 forest regions of the state. One-third of Missouri (15 million acres) is forested. Two-thirds of the forest is in the Ozarks. Oak-hickory is the commonest type. Less than 14% of the forest area is in saw-timber stands. About two-thirds of the saw timber is oak. An explanation of terms includes a brief description of 9 forest types and a list of species. Data were obtained from the study of aerial photos and the field examination of plots.

ROBERTS, E. V. and others. Forest resources of the northwestern Ozark region in Missouri. 19 pages, illus. Central States Forest Experiment Station, Forest Survey Release No. 3. May 1948.

This 13-county region is mostly in the drainage of the Osage and Gasconade Rivers. A map shows its relation to the 4 other forest regions of the state. It comprises 5 million acres, of which a little more than half is forested. 79% of the commercial forest is oak-hickory. Other forest types are white oak, cedar-hardwoods, mixed hardwoods, bottomland hardwoods, and scrub hardwoods. Saw-timber stands occupy only 7% of the commercial forest area. There is a brief description of the forest types and a list of species. Data are based on the study of aerial photos and the field examination of plots.

VEGETATION--FOREST--Continued

ROBERTS, E. V. and others. Forest resources of the prairie region in Missouri. 19 pages, illus. Central States Forest Experiment Station, Forest Survey Release No. 4. June 1948.

This northwestern Missouri region comprises nearly 20 million acres. A map shows its relation to the 4 other forest regions of the state. Only 13% is forested. Saw-timber stands occupy 19% of the forest area. Much less of the forest is dominated by oak than in the Ozarks. 58% of the forest area is dominated by oak, 39% by bottomland and mixed hardwood types. There is a brief description of the forest types(cedar-hardwoods, oak-hickory, white oak, mixed hardwoods, pin-oak flats, bottomland hardwoods, scrub hardwoods) and a list of species. Data are based on the study of aerial photos and the field examination of plots.

ROBERTS, E. V. and others. Forest resources of the riverborder region in Missouri. 19 pages, illus. Central States Forest Experiment Station, Forest Survey Release No. 5. July 1948.

This region includes the counties along the Missouri and Mississippi Rivers from the center of the state to its southeast corner. A map shows its relation to the 4 other forest regions of the state. Nearly one-third is forested. Saw-timber stands occupy 20% of the forest area--more than in any other Missouri region. There is a brief description of the forest types (cedar-hardwoods, oak-pine, oak-hickory, white oak, mixed hardwoods, pin-oak flats, bottomland hardwoods, scrub hardwoods) and a list of species. Data are based on the study of aerial photos and the field examination of plots.

ROBERTS, E. V. and others. Forest resources of the southwestern Ozark region in Missouri. 21 pages, illus. Central States Forest Experiment Station, Forest Survey Release No. 2. March 1948.

This region comprises 5½ million acres in 12 counties. A map shows its relation to the 4 other forest regions of the state. More than half of the area is forested. Saw-timber stands occupy only 9% of the forest area. Two-thirds of the saw-timber is black, white, and post oak. There is a brief description of the forest types (shortleaf pine, cedar-hardwoods, oak-pine, oak-hickory, mixed hardwoods, bottomland hardwoods, white oak) and a list of species. Data are based on the study of aerial photos and the field examination of plots.

SANDBERG, LYNN and HORN, A. G. The forest resource of Crow Wing County. 64 pages, illus. Office of Iron Range Resources and Rehabilitation, State Office Bldg., St. Paul 1, Minn. 1948?

72% of the county's land area is commercial forest. Aspen, jack pine, and oak types make up nearly half of this forest; grass-upland brush and lowland brush make up one-third. Ownership is about equally divided between county, farmers, and small private owners. Conifers are being overcut, aspen and other hardwoods undercut. The brushlands are almost a total loss. There are descriptions of a dozen cover types.

VEGETATION--FOREST--Continued

SPURR, STEPHEN H. Aerial photographs in forestry. 340 pages, illus. The Ronald Press Company, New York. 1948.

This book is intended for use as a text and as a manual. Its 4 parts deal with aerial photographs, aerial surveying, photo-interpretation, and forestry applications. Much of this information is applicable to wildlife cover studies. Drawings and aerial photos are an important part of the book.

WILLIAMS, ARTHUR B. The native forests of Cuyahoga County, Ohio. Scientific Publications of the Cleveland Museum of Natural History 9: 1-90, illus. (Bulletin No. 1, The Holden Arboretum). January 1949. $1.00.

This is as detailed as possible a description of the primitive forest cover of Cuyahoga County, 150 years and more ago. It was a varied forest in a complex environment. The climax was a beech-maple association. An annotated list gives details of the present distribution of all the native trees and the common introduced trees.

VEGETATION--BRUSHLAND

ROWE, P. B. Influence of woodland chaparral on water and soil in central California. 70 pages, illus. California State Board of Forestry. 1947.

"This publication presents results of the first nine years of an experiment started in 1929 at North Fork, California, to study influences of woodland-chaparral vegetation of the Sierra Nevada foothills on surface runoff, erosion, and water yield." Among the factors studied was that of the effect of animal tunnelings on infiltration and erosion. The author concludes that ".....while soil disturbances by small rodents eventually led to accelerated surface runoff and erosion when the vegetation was burned, they appeared to have no harmful effect on rain-runoff relations under undisturbed vegetation cover."

SHANTZ, H. L. The use of fire as a tool in the management of the brush ranges of California. 156 pages. California State Board of Forestry. January 1, 1947.

The author bases his discussion on many quotations from articles pertaining to the vegetation of California and other areas in the world. He discusses fire as a natural factor and fire in the hands of man--not only in its effects on brushlands but also on grasslands, woodland and desert shrubs, and forests. A section on "The Effects of the Removal of the Vegetation Cover by Fire" includes the effects on climate, micro-climate, soil, soil erosion, wildlife, and subsequent forage production. There is a detailed section on "Controlled and Light Burning." Altogether, the discussion and its summary reach far beyond California's brush ranges. There is a bibliography of more than 500 titles.

VEGETATION--GRASSLAND
(See also VEGETATION--FLORAS & MANUALS, Blomquist)

STEWART, GEORGE and HULL, A. C. Cheatgrass (Bromus tectorum L.)--an ecologic intruder in southern Idaho. Ecology 30(1): 58-74, illus. January 1949.

"Approximately 4 million acres in Idaho are now occupied by cheatgrass as the major species; 2 million acres by damaged sagebrush where cheatgrass is the principal herbaceous species; and 10 to 15 million acres of the sagebrush plains which bears cheatgrass in minor proportions." It is naturally a fall annual. From its appearance in the 1890's on bare or thinly vegetated land it spread to range lands injured by grazing or fire, and even into cover that has not deteriorated greatly. It is valuable for soil protection but is a great fire hazard. To be useful in erosion control and to permit the reestablishment of perennials, it should have no more than 50% utilization.

WEAVER, J. E. and BRUNER, W. E. Prairies and pastures of the dissected loess plains of central Nebraska. Ecological Monographs 18(4): 507-549, illus. October 1948.

The region described lies north of the Platte River and southeast of the sandhills. Most of the country is rolling to steep and much is badly eroded. Dominant grasses are blue grama, side-oats grama, big bluestem, western wheatgrass, and buffalo grass. Heavy grazing is easier on the short grasses than on the tall grasses. A study of yield and consumption of forage in a buffalo grass pasture near Kearney lead to the authors' conclusion that good management requires 5 acres per animal unit.

VEGETATION--WILDLIFE PLANTS

ALLEN, DURWARD L. Living fences. Sports Afield 120(3): 46-47,118-121, illus. September 1948.

The author emphasizes farmer-sportsman cooperation in starting living fences of multiflora rose. These fences are profitable to both parties--to the farmer because they help prevent erosion, serve as windbreaks, harbor predacious and parasitic insects, and because they are inexpensive, easily maintained, and almost impenetrable to livestock--to the sportsman because they provide excellent game cover.--M. A. Slattery.

BURGESS, CARRINGTON H. Living fence. The Farm Quarterly 3(4): 50-53, illus. Winter 1948.

Multiflora rose: uses, how to handle it, cost, where to buy it, its limitations.

DAMBACH, CHARLES A. New lessons from old plantings. Journal of Soil and Water Conservation 3(4): 165-168,190, illus. Ocotober 1948.

In the summer of 1946 the author appraised the success of 33 wildlife-erosion control plantings made on Onio farms from 1935 to 1940. Approximately 125 species of shrubs and woody vines were used in 5 types of planting sites: (1) severely eroded areas, (2) field border gullies, (3) pond areas, (4) odd areas, and (5) borders. Adaptation to site, proper handling of stock and protection from fire and grazing were the principal factors limiting success. The author gives the relative performance and site adaptation for the species he observed. The only ones that had a wide range of site tolerance and were suitable for both erosion control and wildlife were multiflora rose, Tatarian honeysuckle, and 4 shrub dogwoods.

VEGETATION--WILDLIFE PLANTS--Continued

TUTTLE, H. J. Farm planting for wildlife. Virginia Wildlife 10(4): 5-7,23, illus. April 1949.
The author gives details on planting bicolor and sericea lespedeza field borders and milo food patches.

VEGETATION--DESERT
(See INSECTS, Tinkham)

VEGETATION--AQUATIC

HOTCHKISS, NEIL and DOZIER, HERBERT L. Taxonomy and distribution of N. American cat-tails. The American Midland Naturalist 41(1): 237-254, illus. January 1949.
Field characters of Typha latifolia, angustifolia, glauca, and domingensis are tabulated and illustrated by photos and drawings. North American range is mapped for each of the 4 species.

MANSUR, C. I., editor. Malaria control on impounded water. 422 pages, illus. Federal Security Agency, United States Public Health Service; and Tennessee Valley Authority, Health and Safety Department, Washington 25, D. C. 1947. $2.00 from Government Printing Office.
Chapter VI, "Shore-Line Maintenance" describes the control of relatively deep-water emergent aquatics by mechanical means and with herbicides. Chapter XIII, "The Relation of Plants to Mosquito Control" discusses in detail 10 types of plants that grow in and adjacent to impoundments. ChapterXIV, "Interrelationships of Malaria Control and Wildlife Conservation" lists plants that are useful to wildfowl and not detrimental to malaria control, and plants undesirable from both standpoints. It discusses water-level management, application of larvicides, and other factors.

PENFOUND, WM. T. and EARLE, T. T. The biology of the water hyacinth. Ecological Monographs 18(4): 447-472, illus. October 1948.
This species is estimated to do several million dollars worth of damage each year in the southeastern coastal states. Most of this is by obstructing navigation and destroying wildlife habitat and food. Water hyacinth speeds up the conversion of ponds to marshes, both by its own bulk and by affording a site for the establishment of marsh species. Vegetative propagation is very rapid. Spraying or dusting 2,4-D by airplane has been a fairly effective means of control. The plant could be eliminated completely.

LAND & SOILS
(See also INVERTEBRATES (GENERAL), Fenton)

LUNT, HERBERT A. The forest soils of Connecticut. 33 pages, illus. Connecticut Agricultural Experiment Station, Bulletin 523. July 1948.

LAND & SOILS--Continued

THORP, JAMES. Effects of certain animals that live in soils. The Scientific Monthly 68(3): 180-191, illus. March 1949.

This article discusses, with quantitative evaluations, the effects on soils of earthworms, ants, termites, crustaceans, and various small mammals. The author concludes, in part, "Suffice it to say that the animals that live in the soil in many places are almost as important in the development of soil profiles as the vegetation of the region."--N. W. Hosley.

WATER

TUCKER, ALFRED, and BIDWELL, MILTON H. Pollution on Long Island. New York State Conservationist 3(3): 16-17, illus. December-January 1948-1949.

About 30% of Long Island's coastal waters are so polluted that shellfish cannot be taken from them for food. In 1947 the wholesale value of the shellfish harvest was 9 million dollars. "It is estimated that with an adequate conservation program and the elimination of pollution, this industry, which employs more than 5,000 men, could be expanded to a value of $20,000,000." Sewage is the main cause of pollution. Duck farms are next.

VAN COEVERING, JACK. Save Michigan's streams. 23 pages, illus. The Detroit Free Press, Detroit 31, Mich. 1948. 15¢ from Public Relations Department of The Detroit Free Press.

Details of pollution by regions and by counties.

WOLF, BILL. Running sores on our land. Part I. Sports Afield 120(3): 42-43,81-87, illus. September 1948.

A vivid account of industrial and domestic pollution in the states from Maryland to Florida. Industrial pollution has increased in the past few years. Little is being done to control either it or pollution from sewage.

WOLF, BILL. Running sores on our land. Part II. Sports Afield 120(4): 36-37,97-106, illus. October 1948.

Another detailed account of industrial and domestic pollution--this time in New England, New York, New Jersey and Pennsylvania. Something is beginning to be done to control it. "There is not a single major river in all the Northeast that could be called relatively clean,....."

WOLF, BILL. Running sores on our land. Part three--the Great Lakes basin. Sports Afield 120(5): 48-49,88-96, illus. November 1948.

Industrial pollution and pollution from sewage are very bad in this region--particularly in Michigan and Ohio. As in the northeastern states, a small start has been made toward correcting it.

WOLF, BILL. Running sores on our land. Part four--Missouri and Upper Mississippi basins. Sports Afield 120(6): 41,74-80, illus. December 1948.

There is widespread pollution in many of the large rivers, particularly by silt. Much of this is man-made, resulting from mining, overgrazing, and poor farming practices. In addition, there is much industrial pollution and widespread pollution from sewage. Something is being done to correct them, particularly in resort lakes and streams.

WATER--Continued

WOLF, BILL. Running sores on our land. Part five--the lower Mississippi drainage. Sports Afield 121(1): 44-45, 71-77, illus. January 1949.

Sewage, industrial wastes, and coal mine acid make the Ohio River watershed one of the worst polluted in the country. Human health and industrial uses are the main reasons for cleaning it up. 8 states have now banded together to do something about it. Expanding industry is ruining many Gulf Coast streams. Conditions aren't much better in the intervening states.

WOLF, BILL. Running sores on our land. Part six--far west. Sports Afield 121(2): 48-49,72-80, illus. February 1949.

Locally, pollution from sewage and industry is very great in the far west. Much has been started to correct it because of the necessity of using water over and over. Fish populations have been greatly reduced by pollution; bathing beaches have been made unfit for use; and polluted irrigation water is a dysentery hazard.

WOLF, BILL. Running sores on our land. Conclusion--the remedy. Sports Afield 121(3): 19-20,60,71-75, illus. March 1949.

Most streams cannot be returned to their natural state but they can be much improved. This needs general public support and money. The public can best be reached through its health and its pocketbook (for money is to be made through pollution control). Some of the worst pollution will be cleared up in 10 years, much in 20 years. Pollution from municipal sewage is best understood by the people and can be ended more quickly than industrial.

CLIMATE & WEATHER

CURRIE, B. W. The vegetative and frost-free seasons of the prairie provinces and the Northwest Territories. Canadian Journal of Research 26, C(1): 1-14, illus. February 1948.

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